

Remarks

As an initial matter, minor amendments have been made to the specification to properly superscript certain characters that were not superscripted due to typographical error. It is respectfully submitted that these changes do not constitute new matter because the changes are minor and the originally-filed claims included the characters in a properly superscripted format.

By way of the foregoing amendment claims 8-13 have been added. Accordingly, claims 1-13 are pending and at issue in the above identified patent application. Of the claims at issue, claims 1 and 8 are independent. In view of the foregoing amendments and the following remarks, reconsideration of the application is respectfully requested.

In the Office action, claims 1, 2, and 5 were objected to for various informalities. It is respectfully submitted that the foregoing amendments, which were not related to reasons of patentability, resolve any informalities that may have existed. Withdrawal of the objections is respectfully requested.

Turning now to the art rejections, claims 1, 3, 4, and 6 were rejected as being anticipated by Tsai (US 5,648,287). Claims 2 and 5 were rejected as being unpatentable over the combination of Tsai and Yoo (US 6,486,039).

Tsai is directed to a process for forming a silicide layer in a semiconductor device. The goal of the Tsai process is to eliminate stringers (or shorts) in semiconductor devices. To eliminate stringers between the silicide of the gate electrode and the source/drain regions, an amorphous silicon layer is formed over the substrate including first spacers. Then, the amorphous silicon is implanted with nitrogen ions and oxidized to form second spacers, thereby increasing the overall width of the spacers. Importantly, the nitrogen ions are implanted on the amorphous silicon after the amorphous silicon is deposited to cover the gate electrode. Accordingly, the nitrogen ions are not implanted in the gate electrode itself.

Claims 1 and 8 recite performing a nitrogen ion-implantation to a front face of the substrate and the gate electrode. It is respectfully submitted that this is not disclosed in Tsai because Tsai implants nitrogen ions into an amorphous silicon layer and not into the gate electrode. This is a significant difference because the result of the nitrogen ion implantation in the gate electrode is a thinner re-oxidation layer on the top of the gate electrode (where the

nitrogen ions are implanted), as opposed to the sides of the gate electrode where a significant quantity of nitrogen ions have not been deposited.

Claim 8 is also allowable for an additional reason. Claim 8 recites a method including performing a nitrogen ion-implantation to a front face of a substrate and the gate electrode, annealing the substrate so as to form a re-oxidation layer that has different thickness on the sidewalls of a gate electrode than on the substrate, and forming LDD structure after annealing the substrate.

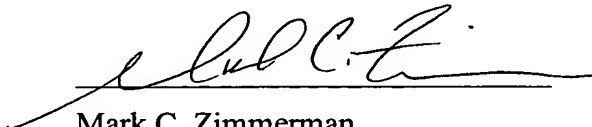
In direct contrast to the recitations of claim 8, Tsai discloses that nitrogen ions are implanted on the amorphous silicon layer (and not the gate electrode, as addressed above) after the source/drain region is formed. Thus, the location and timing of the nitrogen ion implantation is different between Tsai and claim 8.

Accordingly, because Tsai is deficient in its disclosure relative to the recitations of claims 1 and 8, it is respectfully submitted that these claims are in condition for allowance. Further, because claims 1 and 8 are in condition for allowance, so too are claims 2-7 and 9-13 that depend therefrom.

Reconsideration of the application and allowance thereof are respectfully requested. If there is any matter that the examiner would like to discuss, the examiner is invited to contact the undersigned representative at the telephone number set forth below.

Respectfully submitted,
Grossman & Flight, LLC
20 North Wacker Drive
Suite 4220
Chicago, Illinois 60606

Dated: 6/30/2004


Mark C. Zimmerman
Reg. No. 44,006
Attorney for Applicants
312.580.1020